OASH | Office of Climate Change and Health Equity

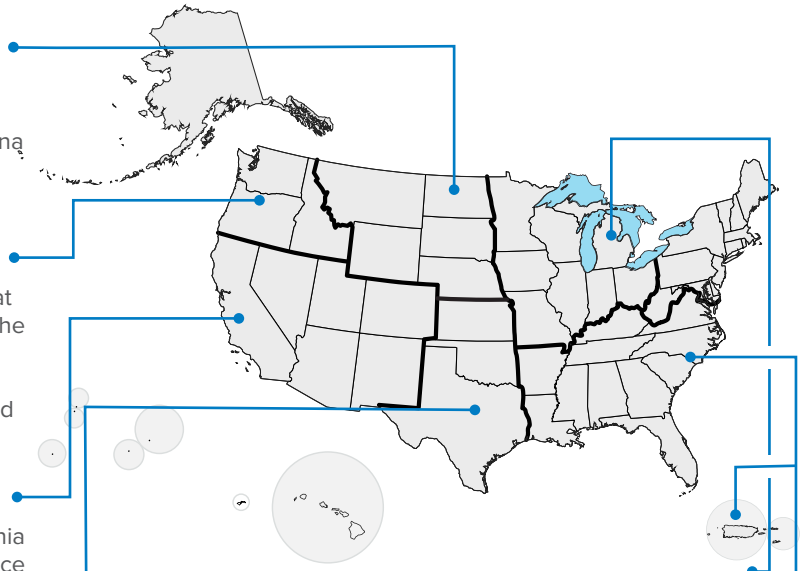
ISSUED JULY 2022

Climate and Health Outlook

Welcome to the third edition of the Climate and Health Outlook from the Department of Health and Human Services (HHS) Office of Climate Change and Health Equity (OCCHE). The Climate and Health Outlook is an effort to inform health professionals and the public on how our health may be affected in the coming month(s) by climate events and provide resources to take proactive action. This edition expands beyond extreme heat to include additional climate-related health hazards.

U.S. Seasonal Forecast for Health: July 2022

Regional health forecasts for heat, wildfire, drought, and hurricanes



Northern Great Plains: Counties in Nebraska (9), Wyoming (9), Montana (6), and South Dakota (3) are projected to have more than 5 heat exceedance days in July, 2022. Drought is expected to persist in Montana and Wyoming while also slightly expanding in South Dakota and Nebraska.

Northwest: Counties in Idaho (15), Oregon (6), and Washington (3) are projected to have more than 5 heat exceedance days in July, 2022. Greater than 25% of the Northwest - primarily southern Oregon and Idaho - is in moderate to exceptional drought and expected to persist. Above normal wildland fire* potential projected for parts of eastern Washington and Oregon.

Southwest: Counties in Colorado (26), Utah (23), Arizona (15) New Mexico (15), Nevada (13), and California (10) are projected to have more than 5 heat exceedance days in July, 2022. A dry climatology precludes any prospects for drought improvements, except across the lower Four Corners region where an anticipated robust Monsoon season may yield some drought improvements. Above normal wildland fire* potential projected for much of northern California and Nevada.

Southern Great Plains: Counties in Texas (122), Kansas (37), and Oklahoma (36) are projected to have more than 5 heat exceedance days in July, 2022. Existing moderate to exceptional drought in Kansas, Oklahoma, and Texas is expected to persist and slightly expand with the exception along the western Gulf Coast where a tropical disturbance will bring locally heavy rainfall, potentially ameliorating drought across southeastern Texas. Above normal wildland fire* potential projected for northern and central Texas and western Oklahoma.

Midwest: Counties in Missouri (5) are projected to have more than 5 heat exceedance days in July, 2022. Soil moisture has decreased considerably across the Mississippi Valley and central Corn Belt, increasing vulnerability to short term drought.

Southeast and Caribbean: The Atlantic basin is forecasted to have an above-average hurricane season. Counties in Georgia (29), South Carolina (16), Virginia (14), North Carolina (11), Alabama (9), Arkansas (9), Kentucky (2), Louisiana (2), Mississippi (1), Florida (1), and Tennessee (1) are projected to have more than 5 heat exceedance days in July, 2022. Drought conditions are projected to improve, except in the lower Mississippi Valley, where drought is expected to persist. Above-normal wildland fire* potential projected for coastal regions in North Carolina, South Carolina, Georgia, and Florida.

Drought/Heat Wave
Flooding
Hurricane
Wildfire

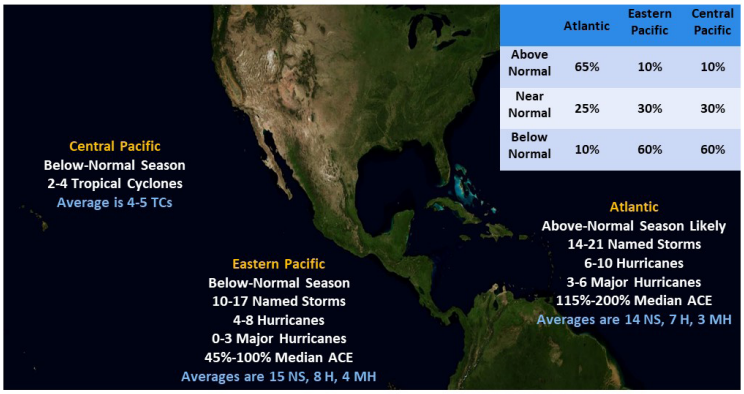
*Smoke from wildfires can impact health hundreds of miles from site of the fire.

Developed with data from the Centers for Disease Control and Prevention, National Oceanic and Atmospheric Administration, and National Interagency Fire Center

We want to hear from you! Please send your feedback on ways to improve the Climate and Health Outlook to ocche@hhs.gov.

Outlook for the 2022 Hurricane season

NOAA's 2022 Hurricane Season Outlooks



	Atlantic	Eastern Pacific	Central Pacific
Above Normal	65%	10%	10%
Near Normal	25%	30%	30%
Below Normal	10%	60%	60%

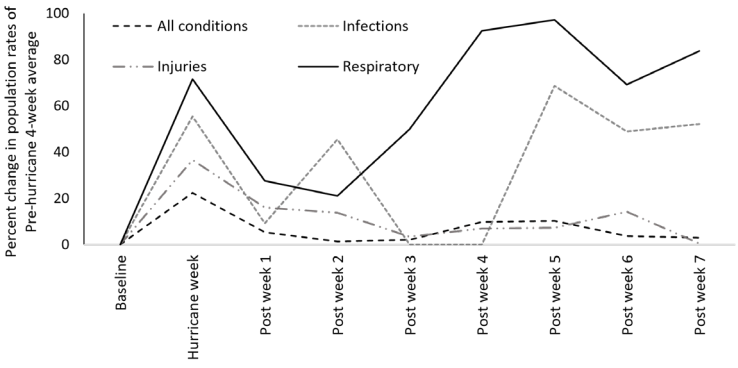
2022 is predicted to be an above-average hurricane season in the Atlantic basin, which includes the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico. According to the forecast, this will be the seventh above-average season in a row. The National Oceanic and Atmospheric Administration (NOAA) Climate Prediction Center's forecast calls for 14 – 21 named storms sustained with winds of 39 mph or higher, with 6 – 10 of those possibly becoming hurricanes with winds of 74 mph or higher, and 3 – 6 possibly becoming major hurricanes with winds of 111 mph or higher. These ranges of named storms, hurricanes, and major hurricanes are among the highest forecasted over the last decade. The 30-year averages for the Atlantic basin (1991-2020) are 14 named storms, 7 hurricanes and 3 major hurricanes. By contrast, the Central Pacific, which includes Hawaii, is forecasted to have a below normal season. On average, the Central Pacific experiences about 1.5 hurricanes per year.

Hurricanes Affect Health in Many Ways

Hurricanes increase the risk for a diverse range of health outcomes. For example:

- Flood water poses **drowning risks** for everyone, including those driving in flood waters. Storm surge historically is the leading cause of hurricane-related deaths in the United States.
- Winds can blow debris—like pieces of broken glass and other objects—at high speeds. Flying debris is the most common cause of **injury** during a hurricane.
- Open wounds and rashes **exposed to flood waters** can become infected.
- Using generators improperly can cause carbon monoxide [CO] exposure, which can lead to **loss of consciousness** and **death**. Over 400 people die each year from accidental CO poisoning.
- Post-flooding mold presents risks for people with **asthma, allergies**, or **other breathing conditions**.
- Power failure during or after hurricanes can **harm patients** who critically depend on electricity-dependent medical equipment.

Health Impacts From Hurricane Harvey (2017)



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Emergency Department Databases (SEDD) and U.S. Census Bureau population data.

This graph shows the observed changes in the population rates of treat-and-release emergency department (ED) visits following Hurricane Harvey in August 2017. Information on ED utilization is based on data from the AHRQ HCUP State Emergency Department Databases (SEDD). Using information from NOAA and the Federal Emergency Management Agency (FEMA), counties that were in the direct path of the hurricane were identified. For these counties, the percent change in the population rate of treat-and-release ED visits during and post-hurricane were compared to the pre-hurricane average utilization rates. Over a 7-week period after the hurricane, the largest increase in population rates of treat-and-release ED visits were observed for respiratory conditions, with relatively smaller increase for infections, injuries and all conditions.

Which parts of the country are at high risk from hurricanes?

The Federal Emergency Management Agency (FEMA) provides information on the risk of different climate hazards across the 50 states and Washington DC through the National Risk Index (NRI) platform. The Risk Index leverages available data for natural hazard and community risk factors to develop a baseline relative risk measurement for each United States county and census tract.

291 counties across 16 states are estimated to have "extremely high," "relatively high," or "relatively moderate" hurricane risk. In these counties, the total population at risk is **60,095,904** people.

Risk factors vary across the 291 counties identified by FEMA. Of these counties:

49 (17%) have a high number of people aged 65 or over, living alone.

153 (53%) have a high number of people without health insurance.

70 (24%) have a high number of uninsured children.

35 (12%) have a high number of people living in rural areas.

235 (81%) have a high number of Black or African American persons.

118 (41%) have a high number of people with frequent mental distress.

154 (53%) have a high number of people living in poverty.

57 (20%) have a high number of people spending a large proportion of their income on home energy.

157 (54%) have a high number of people with severe housing cost burden.

119 (40%) have a high number of people with electricity-dependent medical equipment and enrolled in the HHS emPOWER program.

150 (52%) have a high number of people in mobile homes.

89 (31%) have a high number of people with one or more disabilities.

178 (61%) are identified as highly vulnerable by CDC's Social Vulnerability Index.

*"A high number" indicates that these counties are in the top quartile for this indicator compared to other counties

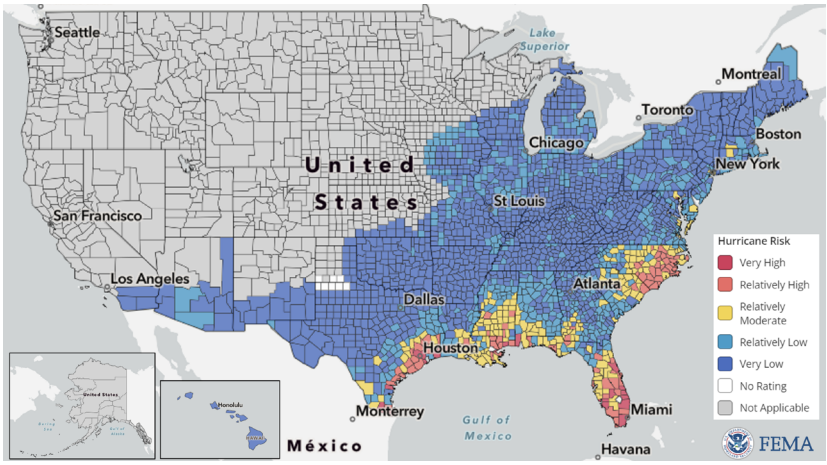


Figure: This map of the United States is colored by the relative Risk Index rating for the Hurricane hazard. The characterization of risk across these counties are based on historical records on hurricane paths and intensity.

Resources to Reduce Health Risks Associated with Hurricanes

The Office of the Assistant Secretary for Preparedness and Response Technical Resources, Assistance Center, and Information Exchange's (ASPR TRACIE's) Hurricane Resources at Your Fingertips, Centers for Disease Control and Prevention's (CDC) Hurricanes and Other Tropical Storms, Ready.gov Hurricanes site, and Ready Business hurricane toolkit include resources on hurricane preparedness for a variety of stakeholders and audiences. The CDC also has guidance on Going to a Public Disaster Shelter During the COVID-19 Pandemic.

The Substance Abuse and Mental Health Services Administration Helpline and Text Service is available 24/7, free, and staffed by trained crisis counselors. Call or text 1-800-985-5990 to get help and support for any distress that you or someone you care about may be feeling related to any disaster.

The U.S. Food and Drug Administration's Hurricanes: Health and Safety site covers multiple topics to help consumers, industry stakeholders and medical providers prepare for hurricanes. If you have Medicare and your medical device is damaged or lost due to an emergency or disaster, Medicare may cover the cost to repair or replace your equipment or supplies.

The CDC has information on preventing carbon monoxide poisoning in case of a power outage. Generators should be used at least 20 feet away from your home.

Image source

Where are extremely hot days expected to be most frequent in July?

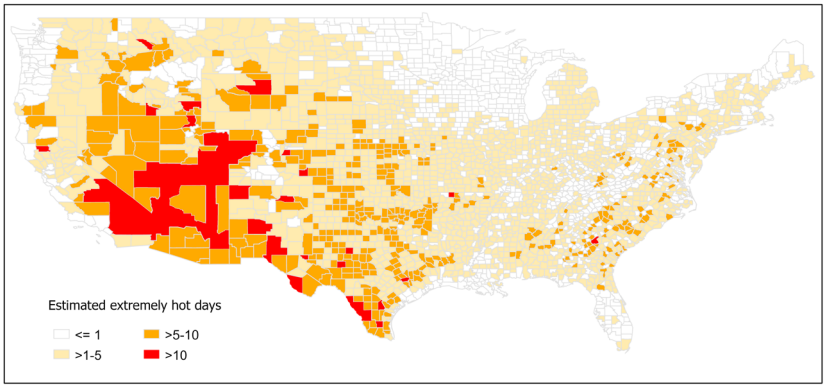


Figure: This map shows the expected number of extremely hot days in July in each county in the contiguous U.S. The forecast is based on the NOAA Climate Prediction Center's probabilistic outlook of temperatures being above, below, or near normal in July. A county's 'normal' temperature is based on the 30-year average from 1991–2020. An 'extremely hot day' is when the daily maximum temperature is above the 95th percentile value of the historical temperature distribution in that county. For more information on your county, please refer to the Centers for Disease Control and Prevention (CDC) Heat and Health Tracker.

In July, 467 counties across 31 states are estimated to have more than 5 expected extreme hot days. In these counties, the total population at risk is 51,455,601 people.

Heat Affects Health in Many Ways

Warmer temperatures increase the risk for a diverse range of health risks. For example:

An increased risk of **hospitalization for heart disease**.

Heat exhaustion, which can lead to **heat stroke** if not treated, can cause critical illness, brain injury, and even death.

Worsening **asthma** and **chronic obstructive pulmonary disease (COPD)** as heat increases the production of ground-level ozone.

Dehydration, which can lead to **kidney injury** and blood pressure problems. Some kidney damage can become irreversible with repeated or untreated injury.

Violence, **crime**, and **suicide** may increase with temperature, adding to the rates of depression and anxiety already associated with climate change.

Who is at high risk from heat in the counties with the most extreme heat days?

Some communities face greater health risks from extreme heat given various risk factors they face. These communities include people who: are elderly and live alone, have existing health conditions, have poor access to healthcare, live in rural areas, work outdoors, make a low income, face difficulty paying utility bills, live in poor housing, and live in urban areas without adequate tree cover.

These risk factors vary across the 467 counties estimated to have more than 5 expected extreme hot days in July. Of these counties:

109 (23%) have a high number of people aged 65 or over, living alone.

212 (45%) have a high number of people without health insurance.

230 (49%) have a high number of uninsured children.

118 (25%) have a high number of people living in rural areas.

99 (21%) have a high number of Black or African American persons.

101 (22%) have a high number of people with frequent mental distress.

100 (21%) have a higher number of people with diabetes.

129 (29%) have a high number of people employed in construction.

154 (33%) have a high number of people living in poverty.

94 (20%) have a high number of people spending a large proportion of their income on home energy.

112 (24%) have a high number of people with severe housing cost burden.

120 (27%) have a high number of people with electricity-dependent medical equipment and enrolled in the HHS emPOWER program.

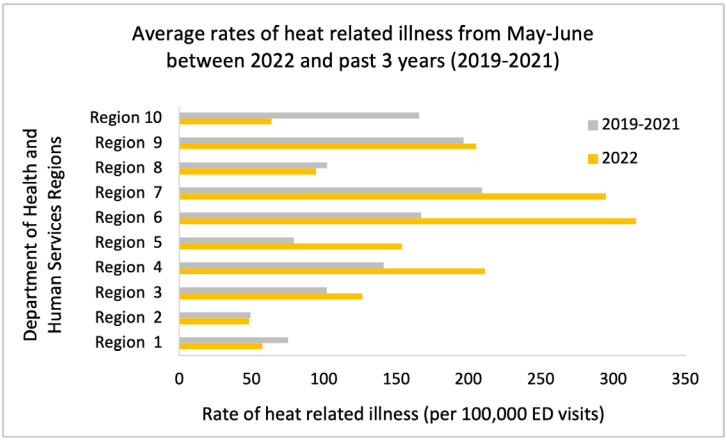
154 (33%) have a high number of people in mobile homes.

168 (36%) have a high number of people living in areas without adequate tree cover.

176 (38%) are identified as highly vulnerable by CDC's Social Vulnerability Index.

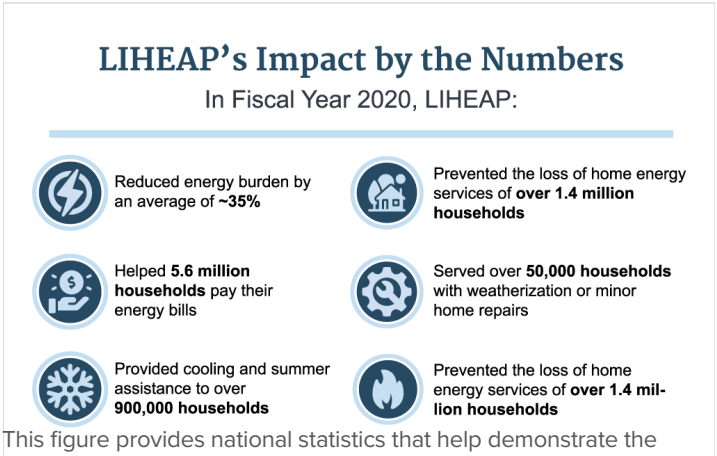
*"A high number" indicates that these counties are in the top quartile for this indicator compared to other counties

Is heat related illness worse in 2022 compared to last three years?



Region 1: CT, ME, MA, NE, RI, VT
Region 2: NJ, NY, PR, VI
Region 3: DE, DC, MD, PA, VA, WV
Region 4: AL, FL, GA, KY, MS, NC SC, TN
Region 5: IL, IN, MI, MN, OH, WI
Region 6: AR, LA, NM, OK, TX
Region 7: IA, KS, MO, NE
Region 8: CO, MT, ND, SD, UT, WY
Region 9: AZ, CA, HI, NV, AS, MP, FSM, GU, MH, PW
Region 10: AK, ID, OR, WA

The graphic above compares the rate of heat related illness per 100,000 emergency department (ED) visits (HRI) from May to June in 2022 with the rate observed in 2019-2021 for the same months. The CDC National Syndromic Surveillance Program provides daily rates of HRI by HHS regions. The average rate of HRI was calculated by HHS regions for May 1–June 30 for 2022 and 2019-2021 separately. 6 out of the 10 HHS regions show higher HRI rates in May-June for 2022 compared to the average rate in 2019-2021. HRI rates have been particularly high in regions 4, 5, 6 and 7 in 2022, the same places that experienced the heatwave in the middle of June.



This figure provides national statistics that help demonstrate the impact of the HHS Low Income Home Energy Assistance Program (LIHEAP) in alleviating the economic burden of energy costs for low-income families. Image source.

How hot will it be, and where, over the next 3 months?

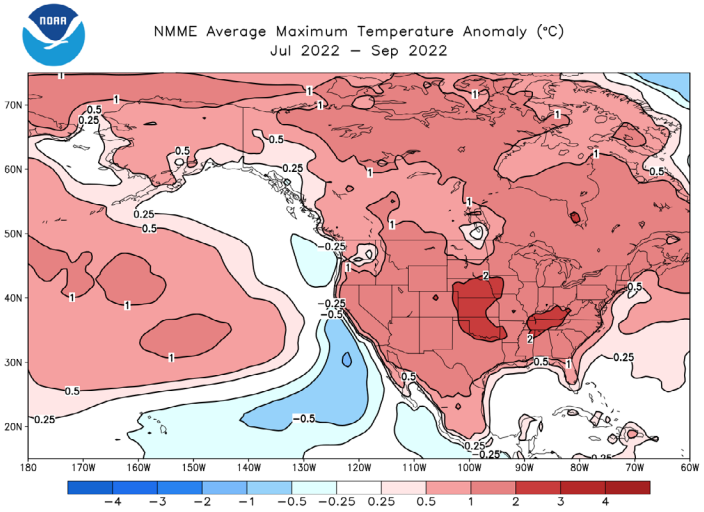


Figure: The North American Multi-Model Ensemble (NMME) predicts that average temperature over the next 3 months (July–September) will be 1.8–3.6°F (1–2°C) hotter than average across much of the contiguous U.S. For more information about this model or prediction, please refer to the NMME website.

For July–September, the North American Multi-Model Ensemble (NMME) predicts that the average temperature will be 1.8 to 3.6°F (1 to 2°C) above-normal for most of the continental United States. However, the U.S. Central and parts of the Appalachian regions may experience a higher 90-day average that is 3.6 to 5.4°F (2 to 3°C) above the normal average temperature for this time period. The NMME integrates multiple forecasts of the next 90 days to build the best estimate of temperatures and precipitation over that time frame. This year's 90-day NMME average temperature forecast for July–September is much warmer than last year's temperature forecast for the same period. Last summer, temperatures were predicted to be 0.9 to 3.6°F (0.5 to 2°C) above normal, whereas this summer's forecast predicts temperatures 1.8 to 5.4°F (1 to 3°C) above normal for most of the continental United States. Note that although many regions may expect a warmer 90-day average temperature, this is not the same as your local weather forecast, in which large fluctuations in temperature may be predicted from day to day.

Staying Safe Indoors

The Low Income Home Energy Assistance Program (LIHEAP) and the Weatherization Assistance Program (WAP) help keep families safe and healthy through initiatives that assist families with energy costs. To inquire about LIHEAP assistance, call the National Energy Assistance Referral (NEAR) hotline at 1-866-674-6327.